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GB00/02932

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REC'D 31 AUG 2000

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**Request for grant of a patent**  
(See the notes on the back of this form. You can also get  
an explanatory leaflet from the Patent Office to help  
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The Patent Office

Cardiff Road  
Newport  
Gwent NP9 1RH

1. Your reference

PRW/P54509

2. Patent application number

(The Patent Office will fill in this part)

9918488.9

6 AUG 1999

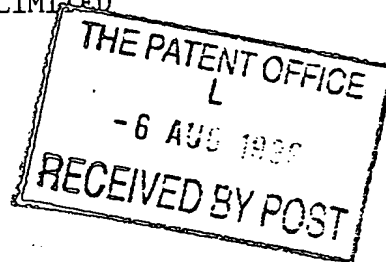
3. Full name, address and postcode of the or of  
each applicant (underline all surnames)PRO-FIT INTERNATIONAL LIMITED  
UNIT 40 ALBION MILLS  
ALBION ROAD  
BRADFORD, BD10 9TF

Patents ADP number (if you know it)

7575897001

If the applicant is a corporate body, give the  
country/state of its incorporation

ENGLAND



4. Title of the invention

IMPARTING STRETCH TO FABRICS

5. Name of your agent (if you have one)

URQUHART-DYKES &amp; LORD

"Address for service" in the United Kingdom  
to which all correspondence should be sent  
(including the postcode)TOWER HOUSE  
MERRION WAY  
LEEDS, LS2 8PA

Patents ADP number (if you know it)

1644004

6. If you are declaring priority from one or more  
earlier patent applications, give the country  
and the date of filing of the or of each of these  
earlier applications and (if you know it) the or  
each application number

Country

Priority application number  
(if you know it)Date of filing  
(day / month / year)7. If this application is divided or otherwise  
derived from an earlier UK application,  
give the number and the filing date of  
the earlier application

Number of earlier application

Date of filing  
(day / month / year)8. Is a statement of inventorship and of right  
to grant of a patent required in support of  
this request? (Answer 'Yes' if:

YES

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an  
applicant, or
- c) any named applicant is a corporate body.  
See note (d))

# Patents Form 1/77

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Continuation sheets of this form

Description 04

Claim(s)

Abstract

Drawing(s)



10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature

Date

5/8/1999

12. Name and daytime telephone number of person to contact in the United Kingdom
- PETER WHARTON  
0113 245 2388

## Warning

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## Notes

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## IMPARTING STRETCH TO FABRICS

This invention relates to a process for treating fabric and to the fabric produced, particularly but not exclusively for application in clothing manufacture, which enables a certain degree and type of stretch to be imparted to, for example, a waistband.

Conventionally, waistband interlining can be elasticated and the outer fabric of the waistband "rouched" or "gathered" providing for a degree of stretch but at the expense of compromising the "tailored" look and fit of the garment to which such an elasticated waistband is attached. Alternatively, it comprises a "non-stretch" interlining which acts as a stiffener stabilising the outer fabric, affording some degree of reinforcement and perhaps providing added resilience. The disadvantage of the latter system of construction is that there is little "give" or "ease" in that area of the garment incorporating the waistband, and the fit of the garment may become uncomfortable to the wearer for example after meals when the waist expands. In prolonged wear the top of the waistband can be forced to "give way" and effectively "roll over" rendering the look of the garment unsightly. In addition a wearer falling mid-way between sizing of "off the peg" waistbanded garments selects a garment which is either too tight or too loose in wear.

In our European patent publication EP-B-0705356 we disclose a method of treating a woven fabric characterised in the combination of two stages - a first stage which includes applying heat and pressure to the fabric in such a manner that the yarn strands substantially across the width of the fabric are forced closer together thus imparting generally semi-permanent "ease" or "stretch" into the fabric, and a subsequent, second stage which includes affixing to the fabric treated according to the first stage of the method a selected interlining and/or interlining combination having inherent stretch whereby the semi-permanent "ease" or "stretch" imparted to the fabric during the first stage is made substantially permanent during the second stage.

The interlining or interlining combination used in the method of the above European patent publication must itself have sufficient stretch characteristics, and sufficiently powerful



elasticity, in order to ensure that the woven fabric in the finished combination is brought back to its original length after stretching.

Such interlinings or interlining combinations are available but are relatively expensive to produce and may involve relatively expensive stretch yarns such as "Lycra" yarns.

The present invention seeks to provide a method of producing a combined fabric with similar stretch characteristics to that described in our above-mentioned European patent publication, initially employing less resilient and less expensive interlinings or interlining combinations.

According to the present invention there is provided a method of treating a woven fabric to produce a stretchable fabric combination which comprises applying heat and pressure to the fabric in such a manner that the yarn strands substantially across the width of the fabric are forced closer together thus imparting generally semi-permanent stretch into the fabric while simultaneously at least partially bonding thereto a synthetic interlining fabric employing a stretchable bonding agent or film.

While not restricted thereto, the woven fabric employed in the method of the invention will usually be of a non-synthetic textile material, for example wool or cotton, which can not normally be permanently set by heat alone. By contrast, the interlining material will normally be a synthetic material which is thermoplastic and can be heat set, such as polyester or polyamide textile materials.

The bonding coating or film is preferably material which as well as bonding will impart stretch to the final combined product and it is preferred for this purpose to use a polyurethane material. The material may be coated on either the woven non-synthetic fabric or the interlining fabric or may be a film interposed between the two.

The method of the invention is preferably carried out by the machine as described in our above-mentioned European patent publication which comprises means for applying heat and pressure to a woven fabric, and transport means for effecting relative movement





between the heat and pressure application means and the fabric whereby passage of the fabric through the apparatus results in the yarn strands substantially across the width of the fabric being forced closer together thus imparting semi-permanent stretch into the fabric. This process may be described as "compressive shrinking" for the purposes of simplicity in the present description. When applied to a non-synthetic woven fabric, compressive shrinking produces stretch but this is not permanent in the sense that it is gradually lost or, if a subsequent heat or steam treatment is applied, will be lost completely at once. Thus, in the process of our above-mentioned European patent publication, the second stage was used to fix, or render "permanent", the stretch characteristics.

In the process of the present invention the interlining material is both fixed to the woven non-synthetic fabric and at the same time is itself set so that the compressive shrinking applied to it is "permanent". Being bonded to the woven fabric it renders the stretch imparted to the fabric "permanent" also.

The interlining material used may be a fine woven polyamide or polyester fabric, preferably the latter, although other fabric structures could be used, such as needled or water entangled non-wovens. While the interlining supplied for use with our above-mentioned European patent publication needed to have a considerable degree of stretch and high elastic modulus, that used initially in the present invention may be of less stretchable and much cheaper material. The additional stretchability is supplied by the compressive shrinking and the extra elastic modulus by the bonding material which is why polyurethane is preferred.

One passage through the machine may be sufficient to produce the finished product in that the bond produced by the bonding coating or film is sufficiently strong for the combination to withstand subsequent wear. Alternatively, if this is not the case, the combined fabric can be passed through a subsequent means such as that described in our above mentioned patent publication for affixing the fabric previously treated in the compressive shrinking area by a second application of heat and pressure to effect complete bonding.



As before, the fabric may be treated in full width form but typically it is treated in strips which are then formed into trouser or skirt waistbands. Clearly the cost of a machine to treat such strips of material is considerably less than that required to treat fabric in full width. It is therefore an advantage of the invention that, with the interlining necessary to stabilise the stretch in the woven fabric being effectively produced at the same time as it is affixed to the woven fabric, the interlining is produced in narrow width, and a full-width production machine for the interlining is rendered unnecessary.

It has been found that, at the temperature normally used in the compressive shrinking process the interlining fabric, a thermoplastic synthetic material, typically a polyester fabric, is heat set so that the extra elasticity imparted to it by the compressive shrinking process is rendered "permanent".

While the fabric of the invention is primarily useful for waistbands for skirts, trousers and the like it is not so-limited. Other uses will become apparent to those skilled in the art. For example, as disclosed in our PCT application GB99/01146, parts of the woven fabric can be left unstabilised, or stabilised to a lesser degree, so that on subsequent relaxation the composite assumes a desired shape, for example a curved shape, which may be useful in many areas in garment construction.

The invention further extends to the combined fabric produced in accordance with the method of the invention.

